



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,114	12/03/2001	Xiaodong Luo	4320.P057	2142

62294 7590 05/11/2006

PERKINS COIE LLP / OMNIVISION TECHNOLOGIES, INC.
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER

JELINEK, BRIAN J

ART UNIT	PAPER NUMBER
----------	--------------

2622

DATE MAILED: 05/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/007,114	Applicant(s) LUO, XIAODONG	
	Examiner Brian Jelinek	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

The Examiner respectfully submits a response to the amendment received on 3/15/2006 of application no. 10/007,114 filed on 12/3/2001 in which claims 1-8 are currently pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2, and 7-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for varying the opacity of the color filter by detecting and applying an electrical signal to the color filter, or, alternatively, varying the opacity of the color filter by an inherent property of the material of the color filter without the need for a signal, does not reasonably provide enablement for an embodiment comprising both of these methods as required in claims 2 and 7-8, i.e. the embodiments are mutually exclusive.

The instant application discloses two different embodiments of the invention.

[0011] The present invention describes an image sensor that incorporates color filters that have variable opacity dependent upon the intensity of incident light. The opacity can be varied inherently by the material used to form the color filter, or alternatively, the opacity may be electrically controlled in response to the intensity of incident light.

[0017] Other materials require the application of an electrical signal in order to modify the opacity of the material. Thus, in one embodiment, a photodetector 107 is used to monitor the intensity of light incident onto the image sensor 101. The photodetector 107 sends a signal to a color filter controller 109. The color filter controller 109, taking the signal from the photodetector 107, can then provide an appropriate electrical signal to the color filters 105 in order to change their opacity.

[0018] FIG. 2 illustrates a method of the present invention for forming an image sensor. First, at a box 201, the image sensor 101 is formed. Next, at box 203, the color filters 105 are then deposited onto the pixels 103 of the image sensor 101. As previously described, the color filters 105 are formed from a material that has variable opacity, either controlled by an electrical signal or automatically. Finally, in one embodiment, the photodetector 107 is formed onto the image sensor 101 at box 205.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 3, and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (U.S. Pat. No. 5,581,300).

Regarding claim 1, Kim discloses an image sensor comprising: a plurality of pixels formed into a two-dimensional sensing array, each of said pixels adapted for converting incident light into an electrical signal (Fig. 6; col. 5, line 49-col. 6, line 4); and a plurality of color filters formed over said plurality of pixels, said color filters having an opacity that automatically varies in accordance with the intensity of incident light without the need for a control signal (Fig. 8, photochromic color filter layer 200; col. 6, line 52-col. 7, line 29).

Regarding claim 3, Kim discloses the color filters are formed from a photosensitive material that increases in opacity as the intensity of said incident light increases (Fig. 8, photochromic color filter layer 200; col. 6, line 52-col. 7, line 29).

Regarding claim 5, Kim discloses a method, comprising: forming a sensing array comprised of a two-dimensional array of pixels, said pixels adapted to convert incident light into an electrical signal (Fig. 6; col. 5, line 49-col. 6, line 4); depositing color filters over said array of pixels, said color filters formed from a material that has an automatic variable opacity without the need for a control signal (Fig. 8, photochromic color filter layer 200; col. 6, line 52-col. 7, line 29).

Regarding claim 6, Kim discloses that material has an opacity that is dependent upon the intensity of incident light (Fig. 8, photochromic color filter layer 200; col. 6, line 52-col. 7, line 29).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (U.S. Pat. No. 5,581,300).

Regarding claim 4, Kim discloses using a color filter layer (Fig. 8, color filter layer 200). Kim does not specifically disclose that the color filters are comprised of red, green, and blue filters. However, Official Notice is given that it is old and well known in the art to provide a color filter comprising red, green, and blue filters to enable an image sensor to measure the intensity of each primary color of light. As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to have provided a color filter comprising red, green, and blue filters to measure the intensity of each primary color of light in order to capture a full color image with a minimum of different types of color filters.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Jelinek whose telephone number is (571) 272-7366. The examiner can normally be reached on M-F 9:00 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached at (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/007,114
Art Unit: 2622

Page 7

Brian Jelinek
5/2/2006


TUAN HO
PRIMARY EXAMINER